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April 26, 2002

By Electronic Filing

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Ex Parte Submission
Establishment of Rules and Policies for Satellite Digital Audio Radio Service in the 2310-2360 MHz Band, IB Docket No. 95-91

Dear Ms. Dortch:

On March 28th, several members of the Wireless Communications Service (WCS) Coalition met with representatives of the Office of Engineering and Technology to discuss technical issues regarding the impact of SDARS interference on wireless DSL systems. During that meeting, the Chief of the Office, Ed Thomas, asked several questions regarding the impact of SDARS interference on WCS CPE receiver bit-error performance (and consequently, the throughput), once SDARS interference reaches a level where RF overload occurs.

The ensuing discussion revealed that OET staff expected a gradual reduction in data throughput as interference levels increase beyond the overload threshold. The WCS Coalition, on the other hand, explained that there is a much quicker, more catastrophic change in throughput once the threshold is reached (i.e., as interference rises as little as 2-3 dB above the blocking threshold, throughput quickly drops to near zero). WCS representatives offered to provide additional information on this topic and that is what is included in Mr. Hightower's letter and the attached performance curves provided by BeamReach.

Please direct all questions regarding this matter to the undersigned.

Sincerely,

Attachments

cc:

Donald Abelson	David Furth
Thomas Sugrue	Ronald Netro
Edmond Thomas	Richard Engelman
Bruce Franca	Ronald Rapasi
Peter Tenhula	Julius Knapp
Samuel Feder	Bruce Jacobs (counsel for XM)
Paul Margie	Carl Frank (counsel for Sirius)
Bryan Tramont	

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April 26, 2002

Mr. Edmond J. Thomas, Chief
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Dear Mr. Thomas,

This is a follow-up to our discussion on March 28 regarding the impact of SDARS interference on wireless DSL systems. This is the additional information on the topic I promised to provide.

In our discussion on interference, I mentioned that when a digital radio system's carrier to interference ratio (nominally "SNR" exceeds threshold), the performance rapidly deteriorates (within a few dB) so that throughput is severely and quickly reduced.

I went to Beamreach and asked for measured performance curves of the throughput for their equipment in the presence of interference. They supplied the attached Figures (1-3). The threshold for performance is a frame error rate of 10^ -3 which corresponds to a (RF channel) BER of 10^ -4.5. The (blue) performance curves include Reed-Solomon error correction.

There are really two factors to consider. The first and most important effect to operators (illustrated by blue curves) is that a change of only 1/2 dB in SNR drives the system BER down at least an order of magnitude in every case. That's the concern I expressed during our meeting: Once the threshold is reached, performance goes over the edge VERY quickly. Thus, we need both long and short term protection against such interference to prevent loss of service.

The second factor is the auto-rating feature that reduces throughput as the SNR deteriorates. While this might seem to mitigate some of the performance issues above, it also reduces the capacity of the cell, and degrades the speed of each subscriber link. An auto-rate reduction will degrade the broadband experience of the subscriber, but more importantly could reduce the base station capacity by a factor of two. This of course, increases our base station cost per subscriber by a factor of two and makes our business case less viable. Thus we concluded that we can't use the auto-rate feature for "protection" against interference.

Give me a call if you'd like to discuss this further. I can also arrange a time to discuss the charts with the Beamreach people if that would be helpful.

Sincerely,

Neale Hightower
Executive Director

BeamReach Networks

Figure 1: BER vs SNR at 4 bits/symbol

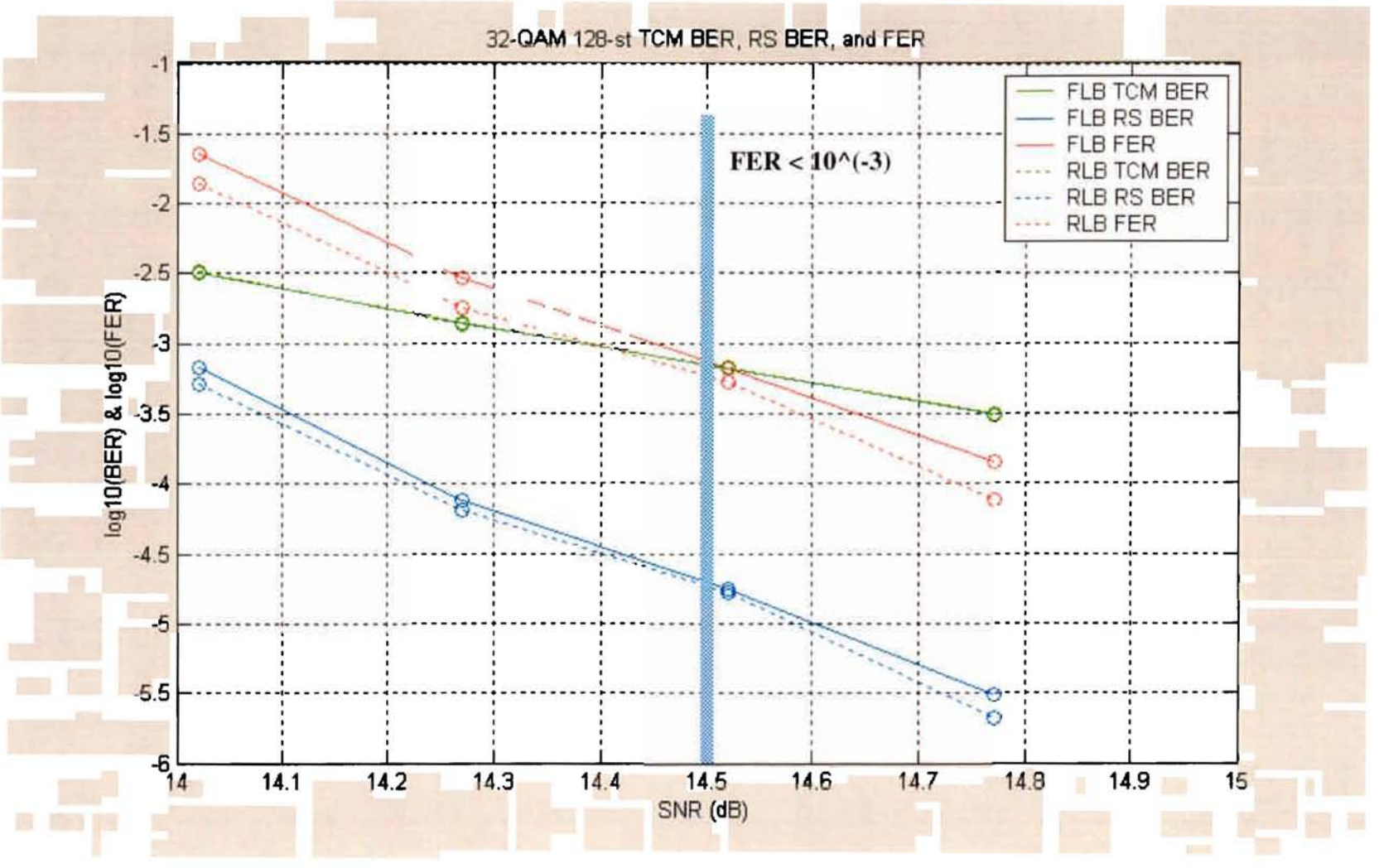

Figure 2: BER vs SNR at 3 bits/symbol

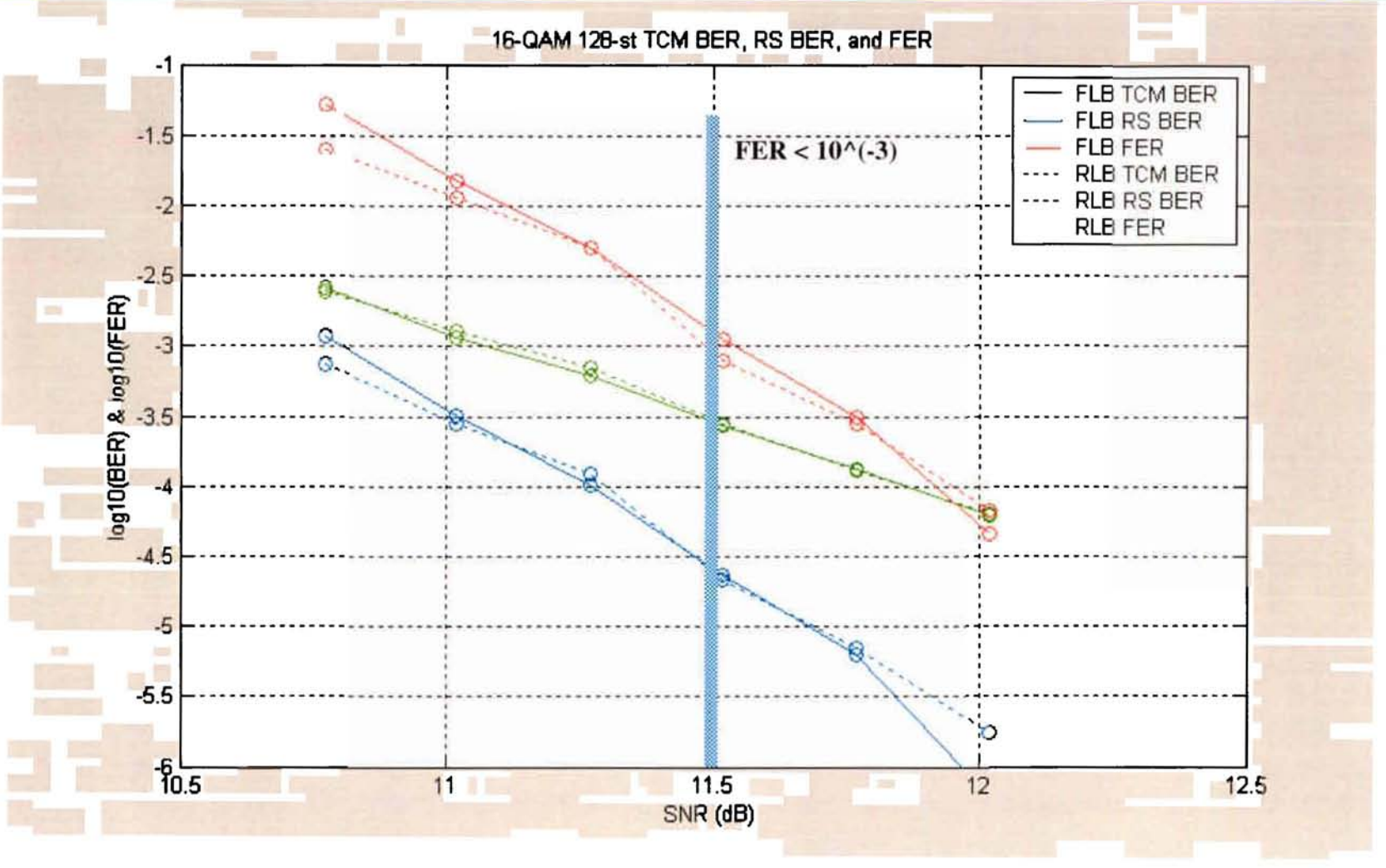

Figure 3: BER vs SNR at 2 bits/symbol